

Access Control Removal Research

Sustrans Innovation Fund Report

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Executive Summary

This report sets out the findings from a Sustrans research project into the impact of access control barriers, located on cycle and walking routes, on levels of active travel, accessibility, and perception of public space.

To understand the impact of barriers, research and monitoring was undertaken at two sites in Greater London where a restrictive barrier was removed, and replaced with an alternative facility that maintained access for all users.

To identify how removal of barriers changed the type and frequency of users passing through each space, counts were undertaken using video monitoring at the pre and post removal stages at each site. Users counted included legitimate users of each path, including cyclists, pedestrians, pushchair users and people using mobility aids, as well as illegal powered use by two wheelers (P2Ws) such as mopeds and scooters.

Perception surveys were also undertaken with local residents and users at each site to understand changes in journeys, accessibility and public spaces. A range of questions were asked about frequency of use, reasons for increased journeys, and levels of anti-social behaviour. Site visits were also undertaken with a group of disability cyclists to understand the impact of barriers on accessibility, and the benefits of removal.

Key Findings

Key findings from user counts and perception studies included:

- The removal of barriers resulted in a 42% increase in cyclists, a 51% increase in buggy users, and a 10% increase in pedestrians
- 64% of respondents stated they were more likely to use the route once the barriers were removed and 25% of cyclists mentioned that they had changed their route as a result
- Across both sites an average of 11 additional P2Ws a day were recorded. This represented less than 1% of users
- 100% of respondents stated that the removal of the barrier made the space more accessible for all users
- 67% of respondents stated that the removal has had a positive impact on the local area. None stated it had a negative impact
- 16% of all people surveyed and 27% of residents stated that there had been a positive impact on anti-social behaviour.

1 Introduction

Access control barriers, ranging from simple bollards to restrictive gates, are a common feature on cycle routes and in residential areas throughout the UK.

They are often a well-meaning response to concerns regarding perception of safety of path users and local residents. Creating physical restrictions, they are typically viewed as an effective way to control illegal use of Powered Two Wheelers (P2Ws), such as motor bikes and mopeds, on paths and urban spaces, and a method of creating a safe environment for users.

However, while access controls limit unwanted behaviour, the physical constraints they present create a significant barrier to developing accessible routes for all users, and healthy, active communities. When used inappropriately, restrictive barriers severely limit the ability of wheelchair users, mobility impaired cyclists, and people using push chairs to utilise these routes, as well as deterring cyclists and pedestrians.

Evidence suggests that in many instances access control barriers do not serve their purpose, with continued access by mopeds and motorcycles continuing after installation. Combined with their exclusionary impact, barriers can often have a negative impact on perception of public space and increase in levels of anti-social behaviour.

To understand the impacts of barriers on cycle routes and local communities, Sustrans undertook a research project at two locations where restrictive barriers have been replaced with accessible alternatives.

This report is set out as follows:

- Section 2: Provides a review of policy and guidance on access barriers, cycle and public space design and accessibility
- Section 3: Provides details of the research methodology
- Section 4: Provides a description of each study site
- Section 5: Provides an overview of the findings from user counts and perception studies, focusing on the themes of walking and cycling, accessibility, and perception of places
- Section 6: Provides conclusions from this research and recommendations for designers and managing authorities responsible for implementation of accessible routes.



Image: A typical access control in Haringey, North London

2 Policy and Guidance

This section provides an overview of policy and guidance on access control barriers and design for highways, cycle infrastructure, urban realm and accessibility.

2.1 Highways and Streetscape Design

2.1.1 Department for Transport Manual for Streets 1 & 2

The Manual for Streets (2007) and Manual for Streets 2 (2010) provide guidance for decision makers on how to design places that work for all members of the community, and lend a higher priority to pedestrians and cyclists.

The Manual for Streets states that traffic-free routes for pedestrians and cyclists should be “barrier free” (p. 42). An emphasis is placed on the role of good design in encouraging good behaviour from users, rather than punitive measures such as barriers and guard railing that may exclude some. A key recommendation is that pedestrians and cyclists should be able to use their chosen route “unimpeded by street furniture...and other obstructions or barriers” (p.63).

2.1.2 London Cycle Design Standards

Published initially in 2005 with an update in 2015, the London Cycle Design Standards (LCDS) is a document produced by TfL that provides guidance and recommendations for the design of cycle-friendly streets for designers and decision-makers alike.

The LCDS recognises that access controls can be necessary to keep motor vehicles out, and as such are not removed from the options open to a designer. However, it is emphasised that any access controls used must not exclude legitimate users of a route, particularly those who may have difficulty making sharp turns or moving through narrow gaps. A single bollard (for example) is recommended to prevent access by cars and other larger motor

vehicles. An option to have a removable bollard can also help to address emergency vehicle access concerns that some may have.

A strong emphasis is placed on exploring all options before recommending access controls on a route. It is suggested that the costs, benefits and dis-benefits of barriers are clearly established to inform any design decision. Furthermore, it is made clear that any intervention must align with the Equality Act 2010, and that all involved must understand that cycles also include non-standard cycles.

2.1.3 Sustrans Guidance

Although Sustrans have produced several Technical Information Notes and other guidance documents regarding traffic-free route design, the guidance note ‘A Guide to Controlling Access on Paths’ is the most relevant to this study. Produced in 2012, the document is aimed at providing designers and decision makers with all the information they need to help them decide whether access controls are appropriate, and what options are available.

As with the LCDS and Manual for Streets, this document emphasises that physical barriers should be avoided wherever possible and should “never be introduced where such barriers would discriminate unlawfully against people with disabilities, or where barriers would prevent rightful access or passage” (p. 6). However, as in the LCDS where a barrier is deemed necessary then a bollard or row of bollards is the preferred option.

It outlines the issues raised by installing barriers as a matter of course, and argues for designers to begin with the assumption that barriers should not be used. The guidance recommends gathering a strong evidence base before suggesting any barrier, and carefully examining the issues that any intervention may be trying to address before proposing any access control. In short, begin any such project by asking: “is an access control required and if so, why?”.

2.1.4 TfL Healthy Streets

The current Mayor has signalled his intention to appoint a Walking and Cycling Commissioner. TfL is placing more emphasis on a more holistic approach to street design, using the Healthy Streets model, which states that a “healthy street” must have the following elements: pedestrians from all walks of life, easy to cross, shade and shelter, places to stop, people choose to walk and cycle, not too noisy, people feel safe, things to see and do, people feel relaxed and clean air.

TfL now place an emphasis on public realm and pedestrian amenity, which when combined with the LCDS recommendations marks a move away from prescriptive street furniture towards a more subtle approach to street and urban realm design that barrier removal supports.

2.2 Accessibility

2.2.1 Equality Act (2010)

Section 29 of the Equality Act 2010 prohibits providers of services from discriminating against people having one or more of various protected characteristics. Section 149 places a duty on public bodies to have regard to the need to advance equality for, and to eliminate discrimination against, persons sharing one or more of various protected characteristics.

In the context of access barriers on highways, the protected characteristic that is most likely to be affected is disability. Therefore, any proposals for access barriers should strive to ensure that the affected path is as accessible for people with disabilities as it is for anyone else. Any barrier denying access to people with disabilities is liable to be in breach of the Equality Act; it may additionally represent an unlawful obstruction where there is a right-of-way.

Additionally, the Act places a responsibility on public bodies to further equality by removing existing disadvantages to disabled people. This would suggest that any existing access barriers for which a public body is responsible that fails to accommodate the needs of people with disabilities should be reviewed to determine whether or not they are contrary to the provisions within the Equality Act.

2.2.2 Wheels for Wellbeing ‘Towards an Inclusive Cycling Policy for London’

Wheels for Wellbeing’s ‘Towards an Inclusive Cycling Policy for London’ (2014) identifies key principles for inclusive cycle infrastructure, that should be implemented to cater for increasing numbers of disabled people using cycling as a mode of travel that provides health benefits, independence, and a pain free experience.

It emphasises the need to accommodate for a wide range of cycle types and to not exclude or disadvantage their riders. This includes people with physical, sensory and cognitive impairments who use handcycles, tricycles (both upright and recumbent), tandems, or solo bikes with or without adaptations to suit the rider’s specific needs (eg: one handed brakes, shortened crank, crutch holders, power assist, etc.).

When providing guidance on access barriers, it is clear that control measures that prevent access to motorbikes, mopeds and scooters also prevent access to inclusive bikes. This is due to the need for users to make awkward manoeuvres or to dismount, both of which present significant barriers to disabled cyclists, and especially handcycles, where it is not an option for the rider to get off and walk at a barrier or hazard.

3 Methodology

To evaluate the impact of barriers in different contexts and environments, two sites with barriers were selected for the study. At each site a restrictive access control barrier was replaced with a new facility to enable access for all users, and meet London Cycle Design Standards.

Site One is located within a highly populated residential area in Bermondsey, South London, and is now incorporated within a TfL Quietway route (Quietway 1). Site Two is located within a suburban park along the Wandle Trail, a greenway route that forms part of National Cycle Network 20. Further details on these sites are provided in section 4.

At each site the following monitoring and surveying was undertaken:

- A camera was installed to capture user types, behaviour and counts pre/ post removal. At each site data was collected from 7am to 8pm each day for the monitoring period
- A questionnaire to collect opinion from cyclists and pedestrians using each space. Across both sites 70 users were surveyed (29 cyclists, 28 pedestrians, 13 stated they walked and cycled).
- Door to door surveys with houses in close proximity to each intervention to understand change in the local environment as a result of barrier removal. Combined with user intercept surveys, 41 people living in close proximity to barriers were surveyed across both sites.
- A site visit with disabled cyclists from Wheels for Wellbeing during the pre and post removal stages to understand the impact of the original barriers and to document changes. During this visit, a range of bikes were used to capture the user experience.

Pre and post video monitoring was undertaken six months after schemes were complete, allowing time for users to adjust habits around the new facilities and capture normalised behaviour and use. At Site One, data was collected in January (pre) and November (post). At Site Two, data was collected in April (pre) and September (post).

Data collection was scheduled for four days between the hours of 7am and 8pm at both the pre and post stages. At Site Two vandalism of the camera resulted in only one day of monitoring at the pre-stage, and three at the post-stage. At Site One, vandalism resulted in loss of one day's data during the post stage.



Image: Video monitoring equipment at Site Two

4 Study Sites

4.1 Site One: Stevenson Crescent

Site One is located along Stevenson Crescent in South Bermondsey, a highly populated residential street in inner London. The intervention is situated under a road bridge, where a street closure has been implemented to stop through traffic.

Before

The original layout consisted of two barriers at the entries to the underpass, each formed of staggered railings across the width of the street (photo above right). A one metre gap was provided between railings to enable access.

Due to spacing, cyclists were required to stop and dismount to negotiate the barriers, while pedestrians were required to leave the footpath and enter the cycle route. Previous consultation with local residents suggested a long term problem with P2Ws using this route as a cut through, as well as anti-social behaviour.

After

In January 2015, the barriers were removed and replaced with a layout that included bollards to prevent cars from entering the site, upgrade of the footway and carriageway to provide dedicated cycling and walking facilities, and urban realm improvements such as greening and lighting.

Motorcycle speed humps were also introduced at the site, with the aim of deterring use by P2Ws at the site, while still allowing access by cyclists.

The new scheme was developed as part of the TfL Quietway programme, and now forms part of a low-traffic cycle route from Waterloo to Greenwich. This route was officially opened after monitoring and research was undertaken.



Images: Stevenson Crescent before (above) and after (below)

4.2 Site Two: Watercress Park

Site Two is located in Watercress Park in Sutton. This is a suburban park in Greater London with leisure facilities and off-road connections for pedestrians and cyclists in the local area. It forms part of the Wandle Trail, a 20km Greenway route through green spaces and residential streets, which is popular for cyclists and walkers.

Before

The original barrier was installed by Sustrans in 2003, and was intended as a piece of artwork combined with a P2W deterrent. This was subsequently adapted by the borough. However, until removal it formed a significant barrier to cyclists, wheelchair users, and pushchair users, due to the necessity to negotiate a curved pathway, which is 1m in diameter (see picture below).

Before its removal, the barrier was publicly criticised on social media by local cycling and accessibility groups. Following this response, the local cycling officer and councillors provided support for its removal.

During initial consultation it was noted by residents that P2Ws were a problem in the local area. P2Ws were also observed in the park during the installation of the new site layout.

After

In November 2014 the barrier was adapted to enable access for a wider range of users. This involved removal of the chicane feature, and retention of a proportion of railing to create a 1.5 metre entrance to the route. Railing was retained to slow cyclists exiting the connecting bridge, and to form a barrier between the path and the river.



Images: Watercress Park before (above) and after (below)

5 Results

The following sections provide an overview of the findings from user counts and perception studies. They are broken into: walking and cycling, accessibility and mobility, and perception of places.



Image: Cyclists using the open route through Stevensons Crescent

5.1 Cycling and Walking

5.1.1 User Counts

A significant increase in active travel at each site was captured from pre/ post user counts at each site. A more notable shift was seen at Site One, which experienced a substantial increase in cycling after removal, while Site Two recorded a larger shift in walking. Key findings included:

- A 20% increase in all users was recorded across both sites, including a 42% increase in cyclists, and an 11% increase in pedestrian use
- At Stevensons Crescent a 39% increase in cycling (65 additional journeys) and a 28% increase in all users was recorded
- At Site Two a 55% increase in cycling and a 12% increase in all users was recorded (7% increase in pedestrians).

5.1.2 Perception Surveys

Building on user counts, feedback collected from user surveys shows a clear correlation between delivering accessible facilities for users, and increase in use. This is reflected in the following responses:

- 64% of all respondents stated that they were more encouraged to use the space, and travelled through more frequently as a result (34% stated no change)
- At Site One 80% of cyclists stated that they used the route more often due to improvements in the site layout
- 100% of respondents stated that they felt changes increased accessibility for all users
- Across all sites 25% of cyclists stated that they had changed their everyday journeys as a result of barrier removal.

5.1.3 Themes in User Feedback

In addition to responses to questions, a number of recurrent themes were drawn from qualitative feedback on the reasons for increased use. These can be categorised as follows:

Comfort and attractiveness

Increased comfort was frequently cited as a reason for use by cyclists and pedestrians. 13 cyclists noted that being able to cycle through without the need to stop and dismount, as well as increased space, significantly improved their comfort and enjoyment of the route. As stated by one cyclist:

It's now possible to cycle along side-by-side chatting straight through here, rather than having to stop and negotiate an obstacle. It makes it more straightforward to cycle, as well as physically easier. – Local resident, Stevenson's Crescent

Pedestrians at each site stated installation of dedicated facilities or increased space created an improvement in the pedestrian environment. For example, stated by one pedestrian:

"I walk through it more than walk around now. It's much friendlier on the eyes, and now we have our own space to walk in."

Key reasons for this improvement for pedestrians included increased convenience due to alignment along desire lines, reduction in potential conflict with other users, increased perception of social safety, and formation of a more attractive and welcoming space. Each of these reasons is detailed further in this section and section 5.3.

Reduction in conflict

A reduction in conflict and interaction with other users was highlighted by both pedestrians and cyclists as an important reason for increased use at each site. As stated by one resident using Site One by foot:

"It has removed conflict between people on the pavement and people cycling suddenly having to squeeze through the same space."

This has had a positive impact on perception of safety for pedestrians at each site, with four users stating that they are now able to use the site without fear of collisions with cyclists or P2Ws.

Building on this, cyclists at Site One noted that they were able to move through the space without needing to manoeuvre around pedestrians, or interact with them along the designated cycle route



Image: Wide access controls at the Wandle Trail enable conflict free journeys for cyclists and pedestrians along a traffic-free greenway

Diversifying Cycle Users

At Site One nine cyclists interviewed mentioned that changes had resulted in an improved environment for cargo bikes and other non-conventional cycles. This was supported with an interview with a DHL courier using a cargo bike who stated:

“It's much more convenient for all different kinds of bikes. My cargo bike doesn't fit through all the other barriers in this area. It's a really great route. 7 other bikes from the business all use this route from HQ into town. It's much more accessible, faster and you don't need to stop.”

While no users mentioned specifically accessibility for different kinds of bikes at Site Two, there was consensus that removal of the barrier resulted in increased accessibility for all users. This is demonstrated further in section 5.2 below.



Image: DHL cyclist using the Quietway One route at the Millwall path

5.2 Accessibility and Mobility

5.2.1 User Counts and Perception Studies

User counts showed a small increase in the number of people accessing each site using mobility aids after removal of each barrier. It is possible that this is the result of constraints along wider routes, lack of awareness of implementation (a problem detailed in section 5.2.3), or monitoring days or time.

A large increase in pushchair users was recorded at each site, showing the benefits to wider communities. Perception surveys also indicated that users and residents felt that new layouts invited use by a more inclusive range of users, while each person with a disability interviewed stated they access each site more frequently.

Key results from the user counts and perception studies are:

- 3 people using mobility aids were recorded using Site One after removal of the barrier. Before removal none were recorded
- A 51% increase in pushchair users was documented at Site One
- Two disabled users interviewed stated that they were more encouraged to use the space, and travelled through more frequently as a result
- 100% of respondents stated that they felt changes increased accessibility for all users



Image: Handcycle user accessing route through Stevensons Crescent, (Site One), where access was previously restricted

5.2.2 Themes in User Feedback

At both sites a pre and post site visit was undertaken with four members of Wheels for Wellbeing (WfW) to understand the impact of access control barriers on disabled users. At Site One a disabled cyclist using an adapted cycle, who was a regular user of the route, was also interviewed during surveying. All disabled users engaged stated that accessibility had significantly improved due to removal of the barriers.

Improved accessibility

At Site One, feedback from WfW at the pre-removal stage highlighted the negative impact on comfort and safety that the original chicane layout had caused. For example, hand cycles found it difficult to make the awkward turning manoeuvre to negotiate the barriers, while users of adapted cycles were required to dismount to pass through the site. For each user this required support from other users or the need to make a physically uncomfortable movement.

Feedback from WfW at the post removal stage indicated a significant improvement in the comfort and directness of the new site layout, leading to an increased sense of accessibility. This was supported further during the interview with the regular adapted cycle user, who stated:

“As a cyclist and an impaired user, I find the changes incredibly helpful, removing obstacles and shortening the length of distance travelled.”

At Site Two, Sustrans and WfW tested a range of disability cycles at the spiral barrier to understand the impact on accessibility before removal. These included a hand-cycle, two single person trikes, a two person trike, and an adapted folding bike.

The barrier created a clear obstacle for each of these cycles. For the adapted folding bike, it was necessary to dismount and push off the railing, an uncomfortable movement for the user, while significant

time was required for the one person trikes and hand cycle to negotiate the barrier (between 1 minute and 3.5 minutes). The two person side-by-side trike was unable to negotiate the barrier.

When tested on more conventional access barriers, these also had a significant impact on journeys. As shown in the photos below, it was necessary for users to dismount to negotiate the side by side trike (a movement many disabled users will not be able to make), while it was not possible to cycle the trike through narrow staggered barriers.

At the post-removal stage, feedback highlighted the increased accessibility for all disabled users. This was due to the increased space, and unrestricted access, that was sufficient to accommodate bikes and mobility aids of different sizes.



Image: Users attempting to negotiate typical barrier with two person trike

Enabling all users

There was a consensus amongst all respondents that the new facilities improved accessibility for all users. This included wheel chair users, people using pushchairs, cargo bikes and tandems. As stated by one resident:

“The previous barrier required cyclists to slow right down. They were almost impassable for tandems, tricycles and cargo bikes. Also barriers on pavement were difficult for pushchairs.”

This is reflected in the increase in pushchair users recorded in the user count.





Images: Adapted cyclists attempting to negotiate barriers installed along the Wandle Trail route (Site Two)

5.3 Perception of places

5.3.1 User Counts and Perception Studies

User counts recorded an increase in P2W accessing each route through the barrier site. Despite this increase in P2Ws, the majority of residents and users stated that the change in layout had a positive change on the local area. Similarly, residents also indicated that changes had reduced anti-social behaviour and increased social safety.

There is a significant difference in how the impact of changes are perceived by users of each location. Of particular note is the difference in perception of the area, as well as the number and impact of P2Ws. This is discussed in more detail in section 5.3.3.

Key results from the user counts and perception studies are:

- Across both sites an average of 11 additional P2Ws a day were recorded
- Across both sites P2Ws represented less than 1% of all users
- 15% of residents surveyed stated that the levels of P2W use had increased after removal. 7% of residents stated that they thought that the levels of P2Ws had decreased.
- At Site One, only 1 resident stated that levels of P2Ws had increased, while 2 stated that it had decreased.
- 57% of all respondents stated that removal of the barrier had a positive impact on the area (43% stated there was no change). At Site One 84% stated the area had improved.
- 15% of residents stated that removal resulted in a positive impact on social safety and anti-social behaviour in the local area (79% stated that it remained the same).



Image: The new barrier free route through Stevensons Crescent (Site One) has increased footfall through this residential area, increasing perception of space and reducing fear of crime and anti-social behaviour

5.3.2 Themes in User Feedback

The following outlines themes collected during user feedback.

Improvements to public space

A positive change in the perception of public space was frequently noted during the perception study. At Site One, a number of users and residents stated the negative and imposing impact that the barriers had created before its removal. As one resident stated:

“They just felt really hostile. They created a feeling of threat. One was stuck in the dark negotiating this barricade.”

Residents also discussed the positive impact that barrier removal and changes had on the public space. Through interviews, respondents stated that the space was more visually appealing, cleaner, welcoming, and more open. Three residents stated that the community now used the space more regularly for socialising and play. As detailed by a resident:

“Now it's a better space for everyone. It's nice to see people feeling safe enough to teach kids sport in the middle of the road. You wouldn't see that before.”

Building on the positive change in this use of the space, respondents highlighted an improvement in their perception of safety at the site. This was due to increased footfall by a diverse range of users, and the open nature of the route. As summarised by one local cyclist:

“It's a nicer space. Because the barriers are gone people come through here now - it feels safer and is not a dead end anymore. Because it's a Quietway there are more people here. It doesn't feel busy but you will always meet someone late at night (in a good way).”

At Site Two, respondents placed less emphasis on improvement to public space in interviews. However, 10 of 30 respondents stated that the space had improved as a result of changes to the site layout



Image: Use of bollards across Quietway One prevent vehicle access, while improving access for communities, pedestrians and cyclists

Anti-Social Behaviour

In addition to a positive change in perception of safety at Site One, respondents indicated that removal of the barriers, and increased footfall, has resulted in a reduction in anti-social behaviour.

Respondents stated that barriers had created an environment that enabled anti-social behaviour and crime. This was due to limited social surveillance, space for groups to gather, and the need for users to stop to negotiate the barrier. As stated by cyclists:

“It did deter motorbike use to an extent but the barriers also attracted anti-social behaviour from youths who knew cyclists had to dismount to get through. Another reason I stopped using this route.”

“I was ambushed by a group of 15 kids at the barrier. They punched me and took my wallet. Since I’ve started using the route again I haven’t seen them hanging around recently.”

Interviewees stated that they felt that this issue had reduced due to increased numbers of users, the ability to pass through spaces without stopping, and a more attractive environment. Respondents at each site also stated a reduction in other anti-social behaviour, such as a reduction in fly tipping and illegal parking.

Connecting communities

At Site One, residents stated that removal of the barrier has resulted in better connection between communities, and as well as improved public realm. As highlighted by one resident:

“Removing the barrier brought the community together. It connects people from each side of the road and brings them together.”

When discussing the impact of the barriers, a number of respondents stated that the barriers had acted like a wall. This had

resulted in the creation of an obstacle for people living in and travelling through the area.



Image: Cyclists travelling side by side at the barrier-free Stevensons Crescent site

Powered Two Wheelers

Respondents at each site stated that there had been an increase in P2Ws since removal of the barrier. At Site Two, five respondents stated that there had been a growth in P2Ws travelling through the space. Two stated that this had resulted in a negative impact on path users and local residents. As stated by one path user:

“There are more mopeds. They now travel through here. It is noisy and it scares dogs and children.”

However, while a number of respondents noted negative impacts at Site Two, others stated that P2Ws had travelled through the site prior to removal, and the change in the barrier had only resulted in a slight increase in numbers. This viewpoint was reflected at Site One, where residents and users stated that despite a slight increase in numbers, the impact had not increased.

A number of respondents stated that the ability for P2Ws to pass through the route without stopping and speeding up had resulted in reduced potential for conflict, and less impact from the noise of acceleration and time spent in the area. As stated by one resident:

“Before motor bikes kept coming up and down. There's less now - maybe 40% to 50% less than there used to be. They used to ride through the barriers anyway. Maybe they just made more noise because they were stopping and starting then speeding off”.



Image: A moped user negotiating the Stevensons Crescent barrier before removal of the barrier

6 Conclusion

Removal of barriers at each space has resulted in clear changes at each site in use, accessibility, perception of place, and levels of anti-social and unwanted behaviour.

Consistent with guidance, removal has created routes that are accessible for all legitimate users and in turn this has resulted in an increase in numbers of people using spaces.

While more P2Ws were observed, increased use by cyclists and pedestrians resulted in a positive change in perception of place and safety. The following conclusions can be drawn from this research:

- Increase in users and improvements to urban realm resulted in a positive improvement in perception of public space and social safety
- Creation of open and accessible routes has correlated with a significant increase in active travel, including cyclists, pedestrians, push chair users, and people using mobility aids,
- Where placed inconsiderately, access control barriers have a significant negative impact on mobility for disabled users. When removed this can lead to a creation of accessible routes and an effective response to self-exclusion
- Removal of barriers can result in an increase in unwanted P2W use. However, at each of these sites P2Ws represented less than 1% of all users, and perception of this impact by residents was mixed across each site

6.1 Recommendations

This report suggest the following recommendations when making the decision to install or to remove barriers.

1. Managing authorities and designers should work in the presumption that cycle routes should be barrier-free and open for access for all legitimate route users.
2. Barriers should only be considered where there is a robust evidence base for implementation, and after comprehensive assessment has been undertaken. When evaluating sites, delivering benefits to legitimate users and accessible routes for disabled users should be priority considerations.
3. When barriers are implemented, retaining access for legitimate users should be placed as a design priority. To ensure this designers should undertake engagement with local disability cycle groups, and work in line with guidance issued by TfL and the DfT.
4. Managing authorities should undertake a review of existing barriers on cycling and walking networks, and assess their utility, impact on accessibility and need. Where barriers impact on accessibility of users, these should be removed or adapted.

6.2 Guidance

The following policy and guidance provides advice and recommendations for the installation of access control barriers. These are described in further detail in Section 2.

- Department for Transport 'Manual for Streets 1' (2007)
- Department for Transport 'Manual for Streets 2' (2010)
- Transport for London 'London Cycle Design Standards' (2016)
- Sustrans 'A Guide to Controlling Access on Paths' (2012)
- Transport for London 'Improving the Health of Londoners' (2016)
- Government Equalities Office 'Equalities Act' (2010)
- Wheels for Wellbeing 'Towards an Inclusive Cycling Policy for London' (2014)